REMARKS/ARGUMENTS

Claims 21-38 remain pending in this application. Claims 21, 23, 25, 27, 29 and 31 have been amended. No claims have been canceled or added.

Claim Objection

Claim 27 has been amended to overcome the Examiner's objection.

35 U.S.C. §§112/101

Claims 27, 29 and 31 have been amended to overcome the outstanding under this section. The Examiner is hereby invited to contact the undersigned with any questions.

35 U.S.C. §103

Claims 25, 26, 31, 32, 37 and 38 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Ohriner et al (U.S. Patent No. 4,803,045. These rejections are traversed as follows.

The present invention, as presently amended, is directed to a corrosion-resisting and wear-resisting alloy that is

obtained by casting a material from a cobalt base alloy into an ingot or a slab as an intermediate material. The present invention also recites a structure having a mesh-like eutectic carbide and a base material surrounded by the eutectic carbide. The eutectic carbide is formed as a discontinuous distribution in the form of multiple grains or clusters. The grain size of the eutectic carbide is specified to be 30μm or smaller.

By providing a eutectic carbide having such a grain size in a cobalt base, nickel base or iron base alloy, the coefficient of friction of the alloy is 0.1 to 0.5, and the grains or clusters of eutectic carbide are dispersed in the alloy and are isolated from one another (see Figs. 4 and 5 of the drawings). As such, the alloy is provided with greatly improved properties and suffers reduced damage from corrosion. By providing a grain diameter of this size, namely 30 μm or less, a sharp increase in impact value is realized. Therefore, damage due to parts sliding against one another is reduced and an improved abrasion resistance is provided.

The present inventors have discovered that certain alloys show a coefficient of friction as low as 0.1 to 0.5 when the distribution of the eutectic carbide is discontinuous. The

present inventors also discovered the high impact value that results. Previously, alloys, such as those discussed above, have generally suffered from erosion damage when exposed to high temperature water for extended periods of time, thereby lowering impact value. This erosion damage further caused these alloys to have an increased coefficient of friction that is above 0.5. As such, the present inventors arrived at the presently claimed invention to overcome these disadvantages in the prior art. Also, it should be noted that the grain size specified in the pending claims is attainable, particularly in a casting, only by plastic hot working at a specific temperature.

None of the cited references disclose these features of the presently claimed invention. Ohriner discloses a wear-resisting welding material for a hard facing alloy or a wear-resisting cast alloy having cast iron with a eutectic carbide diffused in a mesh-like formation. Dong also discloses a wear-resisting welding material having a eutectic carbide diffused in a mesh-like formation.

However, neither of these references are directed to alloys that are to be obtained by plastic hot working. In addition, these references have a eutectic carbide that is

continuously distributed and do not specify the grain size to be less than or equal to 30 μm.

Nakamura discloses a gas turbine nozzle having a cobalt base casting alloy in which the eutectic carbide in the alloy is in a mesh-like formation. As with the previous references, Nakamura does not disclose plastic hot working or that the alloy is for a corrosion-resisting and wear-resisting member that slides over other members. Furthermore, the distribution of the eutectic carbide is continuous and there is no discussion of providing a grain size of 30 μm or smaller. Instead, this reference is directed to an alloy used for obtaining a high tensile strength and elasticity at high temperatures.

In summary, none of the cited references disclose an alloy having the toughness, erosion-resistivity, and low coefficient of friction with excellent wear-resistance as provided in the present invention. As such, it is submitted that the pending claims patentably define the present invention over the cited art.

Conclusion

In view of the foregoing, Applicant respectfully requests that a timely Notice of Allowance be issued in this case.

Respectfully submitted,

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